

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Kutsovsky

Art Unit: 1793

Application No. 10/720,582

Examiner: Wartalowicz, Paul A.

Filed: November 24, 2003

For: FUMED METAL OXIDE PARTICLES
AND PROCESS FOR PRODUCING THE
SAME

**DECLARATION UNDER 37 C.F.R. § 1.132 OF
SHELDON B. DAVIS**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, Sheldon B. Davis, hereby declare that:

1. I am employed by Cabot Corporation, which is the assignee of the subject patent application. I currently hold the position of Manager, Process Research and Development, Performance Segment, at Cabot Corporation. In my current position, I am responsible for overseeing process development for a variety of manufacturing platforms, including the process for preparing fumed metal oxide particles.

2. I received a Bachelor of Science degree in chemical engineering in 1995 from North Carolina State University and my doctoral degree in chemical engineering in 1999 from the University of Arizona. I am a member of the American Association of Aerosol Research and the AiChE, as well as a member of the advisory committee for the Chemical Engineering Department at Northeastern University and Arizona State University. I am an author or co-

author on numerous technical publications pertaining to chemical engineering, especially combustion processes

3. After completing post-doctoral research at the University of Arizona, I held the position of Research Engineer, Applied Research and Development, at Praxair Incorporated (Tarrytown, NY). In 2001, I joined Cabot Corporation, where I have held several positions over the intervening years: Research Engineer, Rubber Blacks Division (2001-2002), Senior Research Engineer, Rubber Blacks Division (2003-2004), Research Project Leader, Fumed Metal Oxides Division (2005-2007), Manager, Process Group, Fumed Metal Oxides Division (2007), and Manager, Process Research and Development, Performance Segment (2008-present).

4. As a result of my educational and employment experience, I am knowledgeable about production processes for the preparation of a variety of particles formed through combustion processes, especially fumed metal oxides and carbon black.

5. I participated in the meeting with Examiner Paul A. Wartalowicz at the U.S. Patent and Trademark Office on March 11, 2009. During the course of the meeting, I discussed the nature of fumed metal oxide particles as compared to other types of particles, such as foamed particles, amorphous soot, dual-phase carbon/silica particles, and the like. In particular, as I explained at the meeting with the Examiner, a fumed metal oxide particle consists of multiple substantially spherical primary particles fused together in a chain-like aggregate structure, as depicted in the transmission electron micrograph (TEM) of conventional fumed silica attached hereto as Exhibit A. In contrast, metal oxide soot consists of substantially spherical particles that significantly differ in physical structure from fumed metal oxide particles, as depicted in the TEM of conventional silica soot attached hereto as Exhibit B. Both of these TEMs were shown to the Examiner during the aforementioned meeting.

6. During the course of the meeting with the Examiner, the following references were discussed: U.S. Patent 5,340,560 (Rohr et al.), U.S. Patent 5,256,389 (Jordan et al.), U.S. Patent 6,312,656 (Blackwell et al.), U.S. Patent 5,904,762 (Mahmud et al.), U.S. Patent

4,822,410 (Matovich), U.S. Patent 5,075,090 (Lewis et al.), U.S. Patent 6,565,823 (Hawtof et al.), and U.S. Patent 4,857,076 (Pearson et al.).

7. While the Rohr '560 patent relates to the preparation of fumed metal oxide particles, the other references do not pertain to the preparation of fumed metal oxide particles. In particular, the other references pertain to the preparation of foamed metal oxide particles, amorphous soot, dual-phase carbon/silica particles, and the like – all of which have a structure unlike fumed metal oxide particles as depicted in Exhibit A and more akin to the structure of metal oxide soot as depicted in Exhibit B.

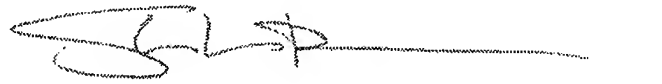
8. As discussed at the meeting with the Examiner, in view of the significant structural differences between fumed metal oxide particles and foamed metal oxide particles, amorphous soot, dual-phase carbon/silica particles, and the like, those involved with the production of fumed metal oxide particles would not have looked to processes for the production of foamed metal oxide particles, amorphous soot, dual-phase carbon/silica particles, and the like for guidance in modifying the process for preparing fumed metal oxide particles.

9. Based on my experience in this field, I do not believe that any ordinary worker in this field would have reasonably believed at the time of the invention described in the subject patent application that the modifications made to the conventional process for preparing fumed metal oxide particles to arrive at the invention would have allowed the process to continue to produce fumed metal oxide particles. In particular, and as I explained at the meeting with the Examiner, it is my view that ordinary workers in this field at that time would have thought the injection of a liquid feedstock into the stream of combustion gas formed from the combustion of the oxidant and liquid or gaseous fuel, as in the inventive process, would have caused the process to produce metal oxide soot (as depicted in Exhibit B), rather than fumed metal oxide particles (as depicted in Exhibit A).

10. I hereby declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true, that these statements were made with the knowledge that willful false statements and the like so made are punishable

by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 31 MARCH '09



Sheldon B. Davis

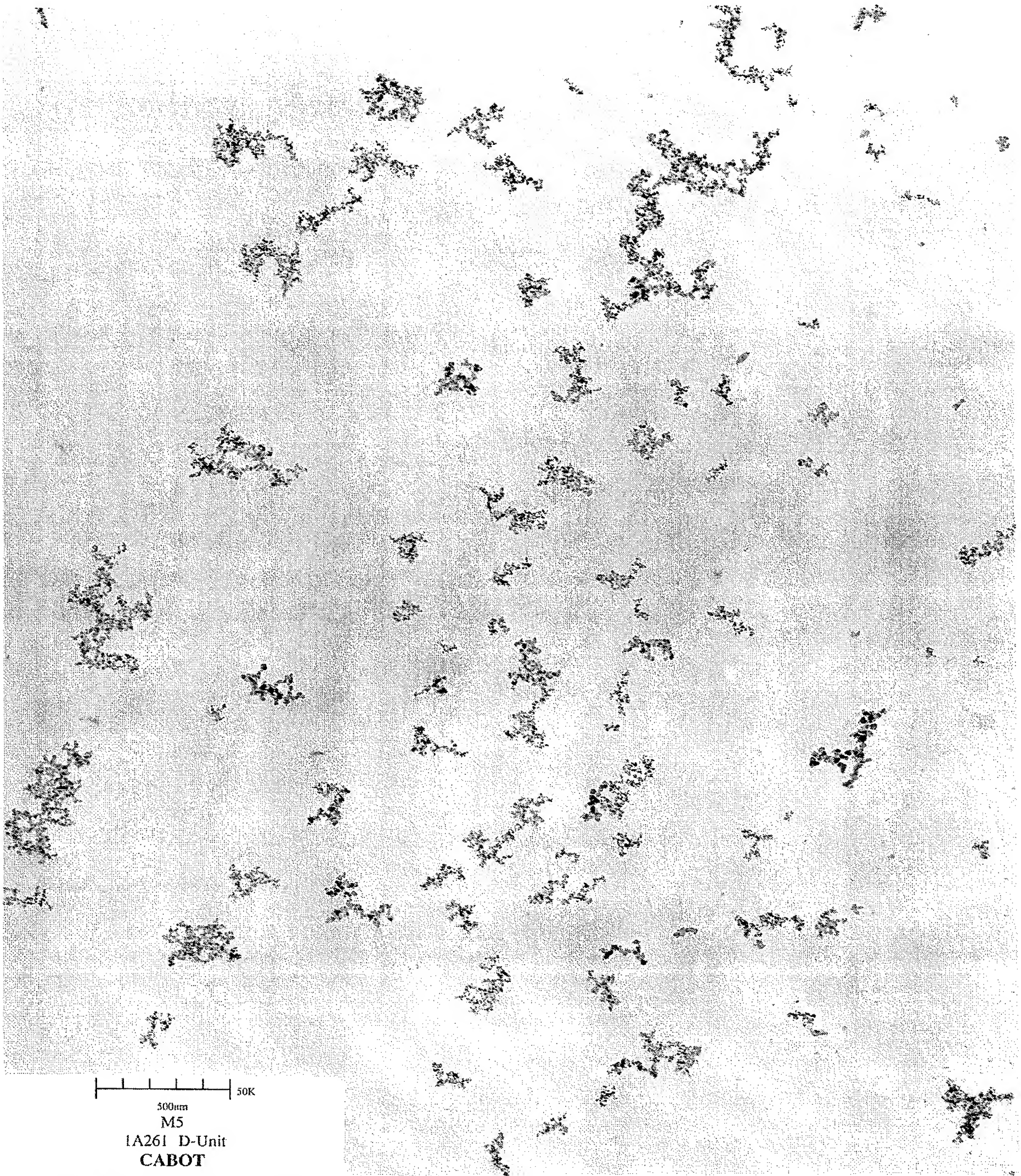


EXHIBIT A



500nm 50K

Silica Soot

CABOT

Electron Microscopy - Billerica Technical Center

EXHIBIT B